

In the Claims

1-39 (canceled).

40 (currently amended). A set of materials comprising two separate compositions of matter, wherein:

a) the first composition of matter is a sample comprising an analyte and an undesired constituent, wherein the analyte is a polynucleotide, and the undesired constituent is selected from a nucleotide, an anionic detergent or a chelator; and

b) the second composition of matter is a material comprising a composition comprising a solid phase that is coated with polynucleotides at least 20 nucleotides in length, wherein:

i) ~~the solid phase binds~~ can bind both the undesired constituent and the analyte;

ii) ~~and the polynucleotide coating covers the exposed surface of the solid phase to an extent that any binding of the solid phase to the analyte is impeded;~~

iii) ~~said polynucleotides are attached to said solid phase by encapsulation coating, adsorption, absorption, ionic interactions or hydrophobic interactions; and;~~

iv) ~~wherein the sample and the second material are not in contact with each other.~~

41 (currently amended). The set of materials according to claim 40, wherein:

a) more than 90% of the undesired constituent ~~binds~~ can be bound by the solid phase;  
and

b) less than 10% analyte ~~binds~~ can be bound by the solid phase.

42 (previously presented). The set of materials according to claim 40, wherein the solid phase comprises agarose, acrylamide, polyethylene, polycarbonate, polypropylene, polystyrene, acrylic, quartz, rubber, polyester, polyvinyl chloride, polyurethane, nylon, nitrocellulose, glass, hydroxylapatite, fluorapatite, silica, a metal, a metal salt or a metal oxide.

43 (previously presented). The set of materials according to claim 42, wherein said metal or the metal present in said metal salt or metal oxide is calcium, iron, chromium, gallium, germanium, lithium, magnesium, manganese, palladium, cesium, tungsten, selenium, tin, vanadium, molybdenum, nickel, copper, zinc, aluminum, silver, gold, platinum or lead.

44 (previously presented). The set of materials according to claim 40, wherein the undesired constituent is a chelator.

45 (previously presented). The set of materials according to claim 40, wherein the solid phase further comprises a magnetic component.

46 (previously presented). The set of materials according to claim 45, wherein the solid phase is magnetic hydroxylapatite.

47 (previously presented). The set of materials according to claim 40, wherein the solid phase is in the form of a bead, particle, sheet, gel, powder, filter or membrane.

48 (currently amended). The set of materials according to claim 40, wherein the coating of polynucleotides is attached to the surface of the solid phase by ~~covalent interactions, ionic interactions, encapsulation-coating, adsorption, absorption, affinity or hydrophobic interactions.~~

49 (previously presented). The set of materials according to claim 48, wherein the solid phase is coated with an oligonucleotide or polynucleotide.

50 (previously presented). The set of materials according to claim 49, wherein the oligonucleotide or polynucleotide is a single, double or triple stranded RNA molecule.

51 (previously presented). The set of materials according to claim 50, wherein the single, double or triple stranded RNA molecule is an RNA homopolymer, *in vitro* transcribed RNA, total RNA, rRNA, tRNA or mRNA.

52 (previously presented). The set of materials according to claim 49, wherein the oligonucleotide or polynucleotide is a single, double or triple stranded DNA molecule.

53 (previously presented). The set of materials according to claim 52, wherein the single, double or triple stranded DNA molecule is a DNA homopolymer, synthetic DNA, prokaryotic or eukaryotic genomic DNA, phage DNA, viral DNA or mitochondrial DNA molecules.

54 (previously presented). The set of materials according to claim 49, wherein the oligonucleotide or polynucleotide is cross linked.

55 (previously presented). The set of materials according to claim 49, wherein the solid phase comprises magnetic hydroxylapatite and the surface treatment material consists of polynucleotides having at least 20 nucleotides.

56 (previously presented). The set of materials according to claim 55, wherein the surface treatment material consists of polynucleotides having at least 50 nucleotides.

57 (previously presented). The set of materials according to claim 40, wherein said analyte is DNA.

58 (currently amended). The set of materials according to claim 40, wherein said solid phase surface is coated with polynucleotides at a density sufficient to ~~at least cover~~ cover the surface in its entirety, ~~the underlying surface phase~~.

59 (withdrawn). A method of binding an undesired constituent to a solid phase comprising mixing the set of materials of claim 40 and allowing said undesired constituent to bind to the coated solid phase.

60 (withdrawn). The method according to claim 59, further comprising separating the analyte from said undesired constituent.

61 (new). The set of materials according to claim 40, wherein said undesired constituent is a detergent.

62 (new). The set of materials according to claim 40, wherein said undesired constituent is a nucleotide.

63 (new). The set of materials according to claim 62, wherein said nucleotide is labeled.

64 (new). The set of materials according to claim 62, wherein said nucleotide is unlabeled.

65 (new). The set of materials according to claim 40, wherein said polynucleotides are attached to said solid phase by encapsulation coating.

66 (new). The set of materials according to claim 40, wherein said polynucleotides are attached to said solid phase by adsorption.

67 (new). The set of materials according to claim 40, wherein said polynucleotides are attached to said solid phase by absorption.

68 (new). The set of materials according to claim 40, wherein said polynucleotides are attached to said solid phase by hydrophobic interactions.

- 69 (new). A set of materials comprising two separate compositions of matter, wherein:
- a) the first composition of matter is a sample comprising an analyte and an undesired constituent, wherein the analyte is a polynucleotide, and the undesired constituent is selected from a nucleotide, an anionic detergent or a chelator; and
  - b) the second composition of matter is a solid phase material comprising hydroxylapatite coated with polynucleotides at least 20 nucleotides in length, wherein:
    - i) the solid phase material can bind both the undesired constituent and the analyte;
    - ii) the polynucleotide coating covers the exposed surface of the solid phase material to an extent that any binding of the solid phase to the analyte is impeded;
    - iii) said polynucleotides are attached to said solid phase material by interaction with calcium cations on the surface of said solid phase material; and
    - iv) the sample and the second material are not in contact with each other.

70 (new). The set of materials according to claim 69, wherein said undesired constituent is a detergent.

71 (new). The set of materials according to claim 69, wherein said undesired constituent is a chelator.

72 (new). The set of materials according to claim 69, wherein said undesired constituent is a nucleotide.

73 (new). The set of materials according to claim 72, wherein said nucleotide is labeled.

74 (new). The set of materials according to claim 72, wherein said nucleotide is unlabeled.

75 (new). The set of materials according to claim 69, wherein the solid phase material is magnetic hydroxylapatite.